

ABSTRACT

Improved polypropylene fibers exhibiting greatly reduced heat- and moisture-shrink problems are provided. Such fibers require the presence of certain compounds that quickly and effectively provide rigidity to the target polypropylene fiber after heat-setting. Generally, these compounds include any structure that nucleates polymer crystals within the target polypropylene after exposure to sufficient heat to melt the initial pelletized polymer and upon allowing such a melt to cool. The compounds must nucleate polymer crystals at a higher temperature than the target polypropylene without the nucleating agent during cooling. In such a manner, the "rigidifying" nucleator compounds provide nucleation sites for polypropylene crystal growth. After drawing the nucleated composition into fiber form, the fiber is then exposed to sufficient heat to grow the crystalline network, thus holding the fiber in a desired position. The preferred "rigidifying" compounds include dibenzylidene sorbitol based compounds, as well as less preferred compounds, such as sodium benzoate, certain sodium and lithium phosphate salts (such as sodium 2,2'-methylene-bis-(4,6-di-tert-butylphenyl)phosphate, otherwise known as NA-11). Specific methods of manufacture of such fibers, as well as fabric articles made therefrom, are also encompassed within this invention.